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Profiles of Environmental Restoration CERCLA Disposal Facilities



LB09902-0018



This document was prepared by the Environmental Restoration Waste Issues Crosscutting Team. For more information about general environmental restoration waste issues, please contact either of the Team Co-Leaders listed below.

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Site-specific contacts for each of the disposal facilities that are in the planning stages or currently operating under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) are provided on the individual profile summaries contained in this document.

A preliminary version of this document was published in February 1999. A new format has been used in this July 1999 publication but the technical information remains the same. Additional copies may be obtained from the Center for Environmental Management Information at 1-800-736-3282. This document is also available on the Internet at <http://www.em.doe.gov>.

Profiles of Environmental Restoration CERCLA Disposal Facilities



U.S. Department of Energy
Office of Environmental Restoration

July 1999



Department of Energy

Washington, DC 20585

July 1999

The Environmental Restoration Program has worked over the past decade with the United States Environmental Protection Agency, State regulatory agencies, and local stakeholders to make decisions on how to safely manage the contaminated media and debris resulting from past research and weapons production. As of 1998, approximately 49 million cubic meters of media and structural debris contaminated with radionuclides and/or hazardous chemicals remain to be addressed by cleanup actions that will be conducted under the management of the Environmental Restoration Program.

Of the 49 million cubic meters of contaminated media and debris, planning assumptions indicate that 10 million cubic meters will be disposed of at facilities built under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The Department of Energy has made a joint decision with our regulatory agencies to construct and operate a CERCLA disposal facility at the following four sites: Fernald, Hanford, Monticello, and Weldon Spring. In addition, the Department is considering constructing similarly dedicated disposal facilities at the Idaho National Engineering and Environmental Laboratory and the Oak Ridge Reservation.

The Environmental Restoration Waste Issues Crosscutting Team has prepared the *Profiles of Environmental Restoration CERCLA Disposal Facilities (Profiles)* to give a concise description of the six disposal facilities. The *Profiles* provide information on the following aspects of each facility:

- location and size;
- decision-making and operating time line;
- capital and operating unit costs;
- amount and types of waste expected to be disposed of in the facility; and
- design of the cell, including cap composition and liner materials.

The Environmental Restoration Program fully considers factors such as the quantity of waste needing disposal, or site-specific features such as proximity to the public, before making a decision on whether to construct and operate a CERCLA disposal facility. These *Profiles* are intended to document and communicate the experiences of those sites with an operating or planned CERCLA disposal facility. I hope you find this information useful. The Environmental Restoration Waste Issues Crosscutting Team is conducting more indepth analyses which will be published in companion documents as they are completed.

James J. Fiore
Acting Deputy Assistant Secretary
for Environmental Restoration



Printed with soy ink on recycled paper

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Introduction

The Environmental Restoration (ER) Waste Issues Crosscutting Team prepared the *Profiles of Environmental Restoration CERCLA Disposal Facilities (Profiles)* to provide a concise description of the six operating or planned facilities designed exclusively for the disposal of waste generated by cleanup activities conducted pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

Planning estimates contained in the Department of Energy's 1998 *Accelerating Cleanup: Paths to Closure* document indicated that approximately 49 million cubic meters of environmental media and debris contaminated with radionuclides and/or hazardous chemicals remain to be addressed by the ER Program. The planning estimates also included information on the anticipated disposition of the contaminated media and debris.

As of 1998, the various sites in the ER program projected that approximately 10 million of the 49 million cubic meters of contaminated environmental media and debris would be addressed with *ex situ* response strategies. The vast majority of the waste generated from the *ex situ* response strategies is expected to be disposed of in the six operating or planned disposal facilities described in the *Profiles*. The Department has made joint decisions with the regulatory agencies to construct and operate CERCLA disposal facilities at Fernald, Hanford, Monticello, and Weldon Spring. The Department is evaluating the feasibility of operating similarly dedicated disposal facilities at the Idaho National Engineering and Environmental Laboratory and the Oak Ridge Reservation.

The *Profiles* provide information on the following aspects of each of the six facilities:

- location and size,
- decision-making and operating time line,
- capital and operating unit costs,
- amount and types of waste expected to be disposed of in the facility, and
- design of the cell, including cap composition and liner materials.

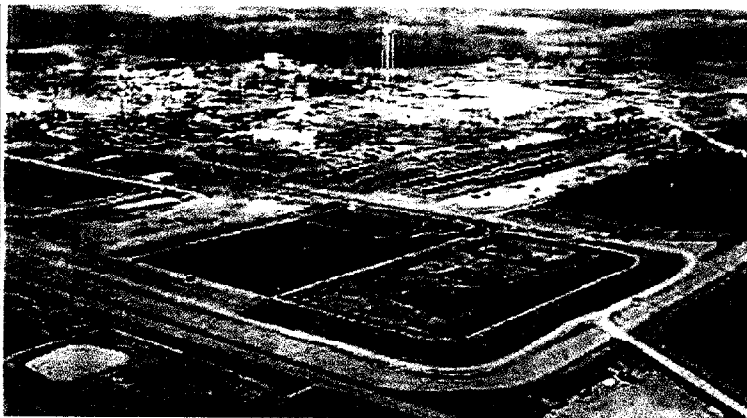
The following table summarizes specific parameters for each of the facilities. As more current data are developed, individual facility descriptions will be updated as necessary.

Additional in-depth analyses are currently underway to evaluate specific aspects of these facilities, such as life cycle costs, waste acceptance criteria, and types of contracts used for the various phases of each disposal facility. The results of these in-depth analyses will be published as companion documents to these *Profiles*.

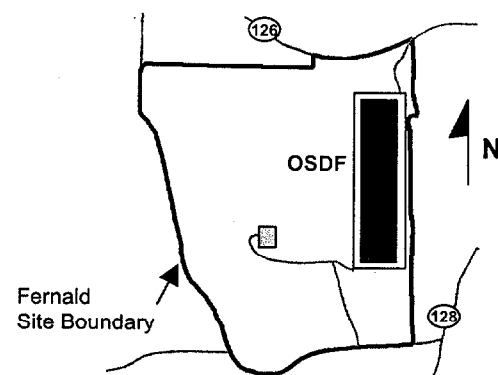
CERCLA Disposal Facility Parameter Summary

Parameters		Fernald OSDF	Hanford ERDF	INEEL ICDF	Monticello Facility	Oak Ridge EMWMF	Weldon Spring Facility
S I Z E	Est. Volume of Waste to be Disposed (in M m ³)	1.9	3.8	.36	1.8	.84	1.1
	Waste Footprint (in acres)	70	94	26	80	44	40
	Area of Total Facility, including buffer (in acres)	140	up to 640	55	108	98	70
	% of site area occupied by facility	13	<1	<1	Not Applicable	<1	31
T I M E	Time between ROD and first waste received (in months)	30	18	17+	~78	15+	~54
	Projected Closure Date	2006	2035	2012	2000	Between 2011 and 2033	2001
C O S T	Unit Disposal Costs (\$/m ³):						
	- Capital	84	22	112	34	81	97
	- Operation	16	42	49	13	85	12
W A S T E	Waste Type Received	LLW	LLW, MLLW, HAZ	LLW, MLLW, HAZ	11e(2) by-product material	LLW, MLLW, HAZ	11e(2) by-product material
	% Bulk Soil	85	90	46 - 64	99	23	62
	Major Waste Contaminants	Uranium, thorium, radium	Fission products & heavy metals	Fission products & heavy metals	Uranium, radium, heavy metals	Uranium, technetium	Uranium, thorium
D E S I G N	Thickness of Cap (in ft)	8.75	17.5	20	8	16	8
	Thickness of Compacted Waste Placed in Cell (in ft.)	54	70	14	50	35	65
Abbreviations: LLW = low-level waste; MLLW = mixed low-level waste; HAZ = hazardous or toxic chemical waste							

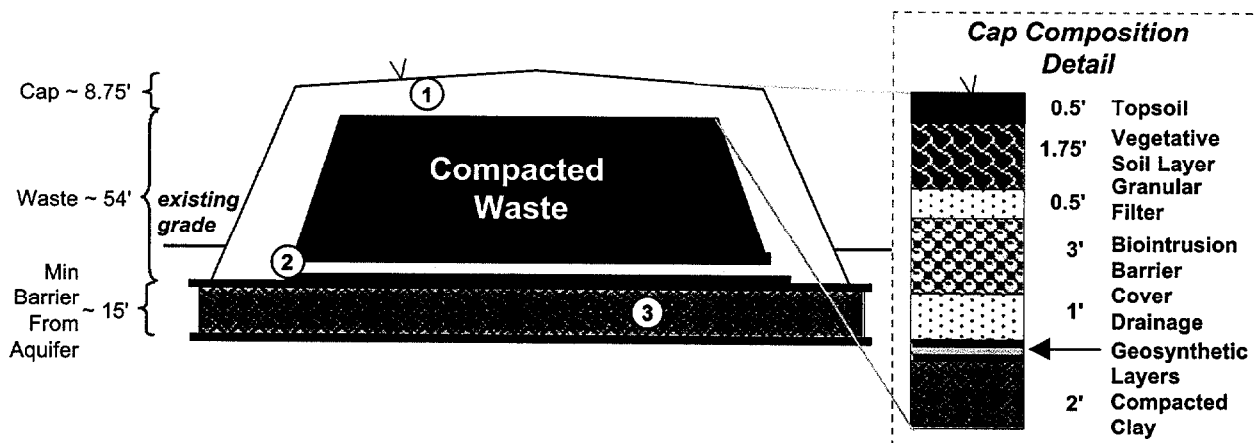
Fernald On-Site Disposal Facility



Site Layout



Design



The disposal facility is designed for eight cells, with a contingent ninth cell. The disposal cell is designed to limit migration of contaminants and remain stable for 1,000 years to the extent reasonable, and in any case no less than 200 years.

- ① The cap is a multicomponent cover, approximately 8.75 feet thick, with components to limit water infiltration (geomembrane) and biointrusion (cobblestones).
- ② A liner system, including a leachate collection system, is constructed beneath the waste and is approximately 5 feet thick. It is composed of multiple layers of clay, gravel, and a geosynthetic liner, and is designed to protect the Great Miami Aquifer.
- ③ A minimum 15-foot thick barrier of glacial till (sandy lean clay) is maintained between the cell and the Great Miami Aquifer.

Support facilities include a pad for staging and transferring materials, a leachate conveyance system, site access/control points, haul roads, and an on-site borrow pit area that is estimated to be 50 to 80 acres in size.



<p>Construction of the disposal cell</p> <p>Jan 1995</p>	<p>Construction of the disposal cell</p> <p>Mar 1995</p>	<p>Construction of the disposal cell</p> <p>June 1995</p>	<p>Construction of the disposal cell</p> <p>July 1997</p>	<p>Construction of the disposal cell</p> <p>Dec 1997</p>
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Location and Size

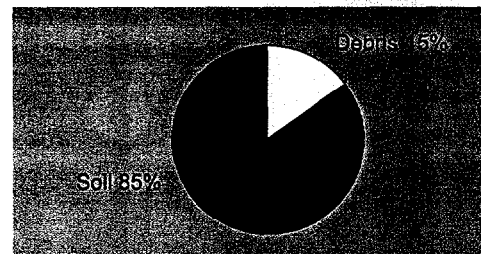
- The Fernald Environmental Management Project (FEMP) is located approximately 18 miles northwest of Cincinnati, Ohio.
- The Fernald On-Site Disposal Facility (OSDF) is located on the east side of the former production area at the 1,050-acre Fernald site.
- The footprint to be used for waste disposal is approximately 70 acres, with a total facility area of 140 acres including the buffer zone.

Waste Type

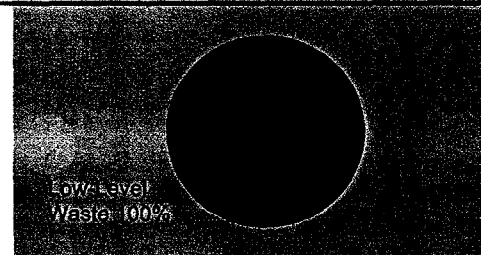
Total Estimated Volume to be Disposed = 1,900,000 m³

- The primary radioactive contaminant is uranium. Thorium and radium are also present as radioactive decay products. Technetium-99 is in some waste streams from the former process area, a small fraction of which is projected to be disposed of in the OSDF.
- The facility will receive waste from FEMP only. The waste acceptance criteria were developed to protect the underlying Great Miami Aquifer. The waste acceptance criteria include maximum concentration limits on specific radionuclides and chemicals, size criteria, and a list of prohibited items.

Waste Form



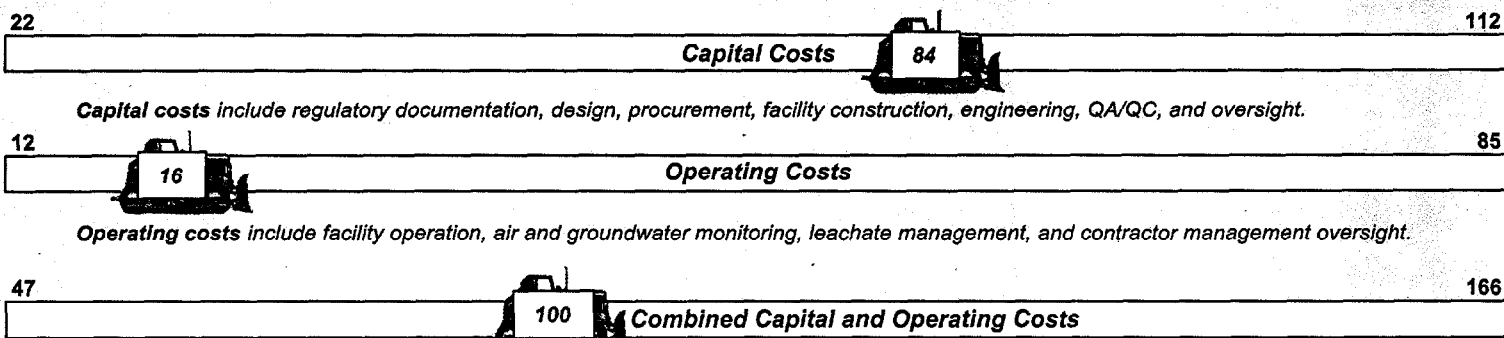
Waste Category



Source: DOE, 1999, Final Design Package for the Fernald On-Site Disposal Facility.

Fernald OSDF vs. Range of ER CERCLA On-Site Disposal Facility Unit Costs

\$/m³



Capital and operating costs were totaled to develop a combined sum cost for each of the six facilities; this bar chart portrays the range of these six facility-specific combined-sums.

The disposal costs shown here are estimates from Phase I of an analysis performed by the Environmental Restoration Waste Issues Crosscutting Team. More detailed estimates are being analyzed in a Phase II effort currently underway and include long-term stewardship. These profile sheets will be updated to include any changes in unit cost estimates resulting from the Phase II effort.



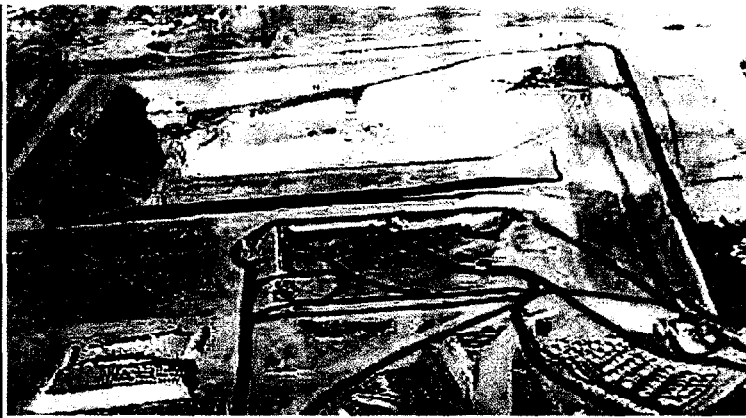
– Estimated Cost at Fernald (in '98 dollars)

2006

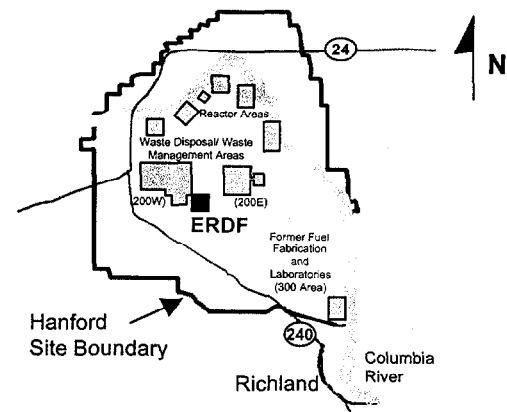
Every
5 Years

For specific information on the Fernald OSDF, please contact Jay Jalovec in the Fernald Area Office at (513) 648-3122 or jay.jalovec@fernald.gov.

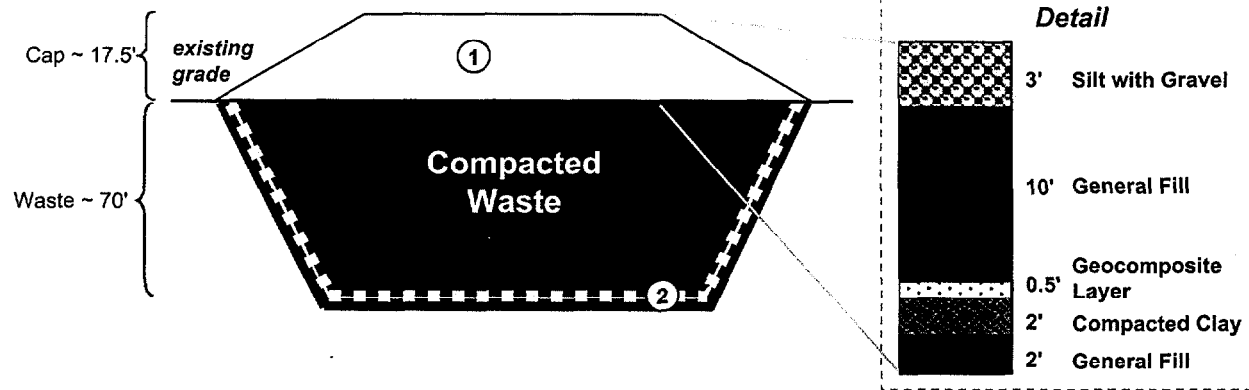
Hanford Environmental Restoration Disposal Facility



Site Layout



Design



The facility is constructed in 2-cell increments. Each cell is 500 feet per side with 3-to-1 side slopes. Additional cells can be added as needed within the ERDF fenced area. The critical receptor driving ERDF's design is protection from a hypothetical inadvertent intruder and compliance with DOE Order 5820.2A performance objectives.

- ① As portions of the facility are filled, a cap will be installed (see cap composition inset above for details).
- ② The facility is engineered to prevent rainwater and snowmelt from entering the zone containing radioactive waste. A double liner that complies with requirements of RCRA is installed beneath the contaminated material. A leachate collection system is placed between the liners to collect any liquids (little liquid is expected because of the arid climate).

Support facilities include scales, loading/unloading area, leachate collection and storage facility, and site access/control points. Borrow materials (e.g., gravel used in the leachate collection system) are obtained from on-site locations near ERDF.

10



June
1994

Jan
1995

July
1996

Location and Size

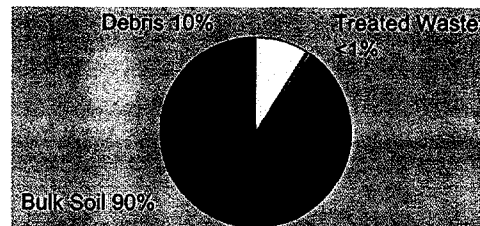
- The Hanford Site occupies 562 square miles (or about 360,000 acres) and is located north of and adjacent to Richland, Washington.
- The Hanford Environmental Restoration Disposal Facility (ERDF) is more than 8 miles from the Columbia River on the central plateau, between the 200 East and 200 West Areas of the Hanford Site.
- The total footprint of the four ERDF cells being used or constructed as of 1999 is 47 acres. Under the current CERCLA Record of Decision (ROD) four additional cells could be added making the total area used for waste disposal 94 acres. The final fenced boundary of ERDF is projected to be 1 square mile (or 640 acres).

Waste Type

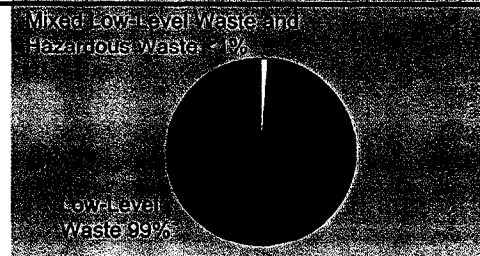
Total Estimated Volume to be Disposed = 3,800,000 m³

- Principal waste contaminants are fission products and heavy metals.
- The Hanford ERDF accepts on-site waste from cleanup activities only.
- The majority of the waste is bulk soil placed in roll-off containers lined with plastic. In addition, packaged waste (e.g., in sealed containers or drums) is also allowed.

Waste Form



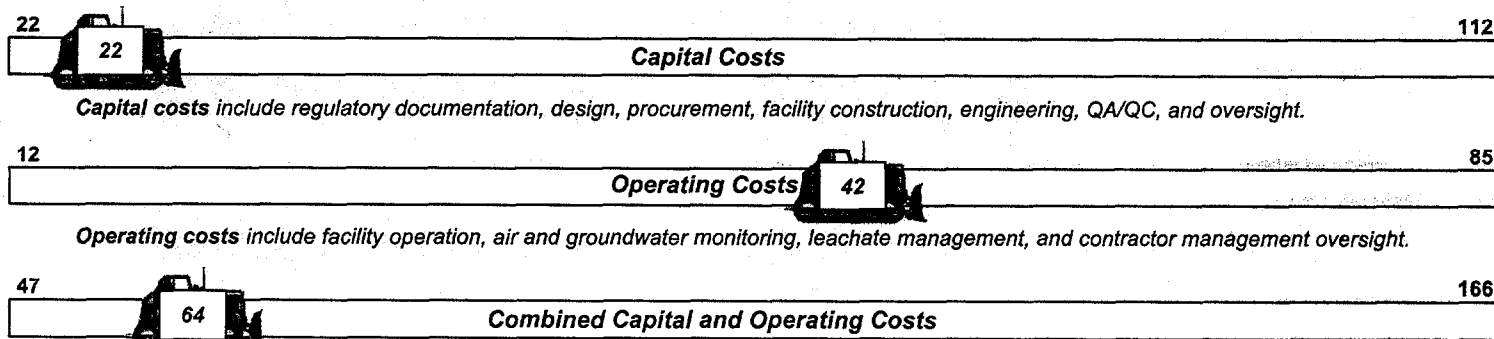
Waste Category



Source: DOE, 1998, *Accelerating Cleanup: Paths to Closure* database.

Hanford ERDF vs. Range of ER CERCLA On-Site Disposal Facility Unit Costs

\$/m³



Capital costs include regulatory documentation, design, procurement, facility construction, engineering, QA/QC, and oversight.

Operating costs include facility operation, air and groundwater monitoring, leachate management, and contractor management oversight.

Capital and operating costs were totaled to develop a combined sum cost for each of the six facilities; this bar chart portrays the range of these six facility-specific combined-sums.

The disposal costs shown here are estimates from Phase I of an analysis performed by the Environmental Restoration Waste Issues Crosscutting Team. More detailed estimates are being analyzed in a Phase II effort currently underway and include long-term stewardship. These profile sheets will be updated to include any changes in unit cost estimates resulting from the Phase II effort.



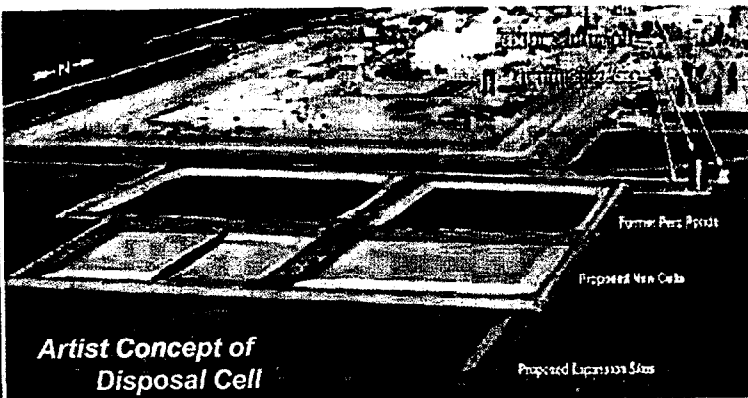
— Estimated Cost at Hanford (in '98 dollars)

2035

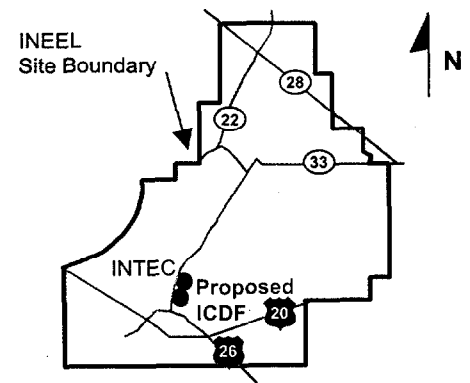
Every
5 Years

For specific information on the Hanford ERDF, please contact Owen Robertson in the Richland Operations Office at (509) 373-6295 or Owen_Jr_Robertson@rl.gov.

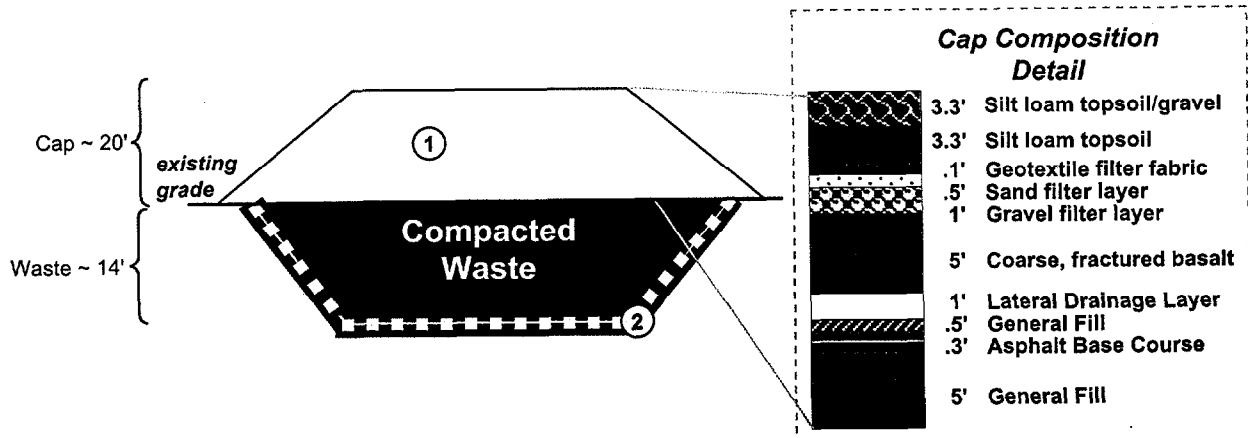
INEEL CERCLA Disposal Facility



Site Layout



Design



The design presented is conceptual and may change as the development of the Record of Decision proceeds.

- ① The cap will be designed to provide a water storage component, a capillary break component, and a barrier component as shown in the cap composition inset above.
- ② The conceptual design of the liner system includes 1.5 feet of protective soil between the waste and a double geosynthetic liner with sand barriers followed by 3 feet of clay or asphaltic concrete. Minimal leachate is expected due to the arid climate and soil properties. Any leachate collected during open cell operations would be pumped to holding tanks and recycled for fill dust suppression/compaction control.

12



Oct
1998

September
1999

July
2000

2001

Location and Size

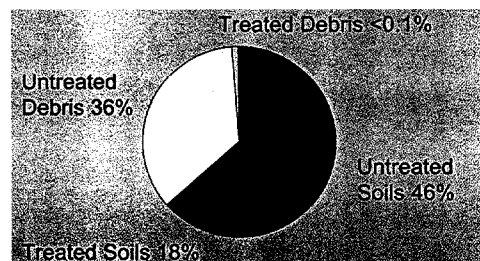
- The Idaho National Engineering and Environmental Laboratory (INEEL) is located approximately 44 miles northwest of Idaho Falls, Idaho.
- The INEEL CERCLA Disposal Facility (ICDF) is proposed to be located south of the Idaho Nuclear Technology and Engineering Center (INTEC, formerly the Idaho Chemical Processing Plant). The area is near the center of the 569,000-acre INEEL reservation.
- The footprint of the disposal cells would cover approximately 26 acres. The total facility area, including buffer, would be approximately 55 acres. Conceptually, the facility would consist of six cells; four cells would be south of the existing percolation ponds and two that could be built in the location of the current ponds once they are removed from service and any contaminated soils are excavated.

Waste Type

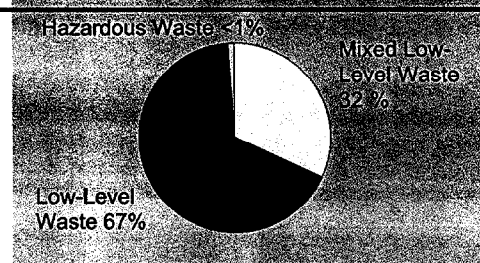
Total Estimated Volume to be Disposed = 360,000 m³

- The proposed ICDF would accept only those wastes generated from CERCLA actions within INEEL. Soil and debris generated outside INEEL WAG 3 Area-of-Contamination (AOC as defined under CERCLA) would be treated, as necessary, to comply with RCRA Land Disposal Restrictions via cement stabilization and/or thermal treatment. The CERCLA Feasibility Study assumed that WAG 3 AOC soil and debris waste would not require treatment prior to disposal.
- The ICDF would receive unpackaged wastes contaminated with cesium-137, strontium-90, iodine-129, neptunium-237, and plutonium, along with metals (mercury, lead, chromium).
- Waste acceptance criteria (WAC) will be established for the ICDF. The WAC will be based upon modeling to ensure that the contaminant inventory does not adversely impact achieving the remedial action objectives for groundwater (the Snake River Plain Aquifer). The WAC would be developed as part of the project's remedial design phase.

Waste Form



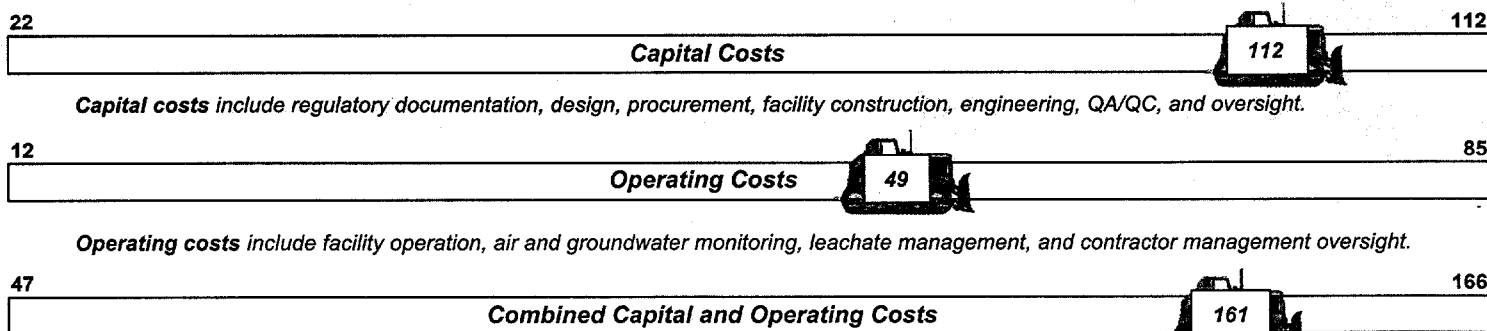
Waste Category



Source: DOE, 1998, Feasibility Study Supplement Report, Revision 2, (DOE/ID-10619).

INEEL Facility vs. Range of ER CERCLA On-Site Disposal Facility Unit Costs

\$/m³



Capital costs include regulatory documentation, design, procurement, facility construction, engineering, QA/QC, and oversight.

Operating costs include facility operation, air and groundwater monitoring, leachate management, and contractor management oversight.

Capital and operating costs were totaled to develop a combined sum cost for each of the six facilities; this bar chart portrays the range of these six facility-specific combined-sums.

The disposal costs shown here are estimates from Phase I of an analysis performed by the Environmental Restoration Waste Issues Crosscutting Team. More detailed estimates are being analyzed in a Phase II effort currently underway and include long-term stewardship. These profile sheets will be updated to include any changes in unit cost estimates resulting from the Phase II effort.



— Estimated Cost at INEEL (in '98 dollars)

Site
CERCLA
Closure

2012

Existing
Institutional
Controls Remain
Effective

2045

Facility
Performance
Review

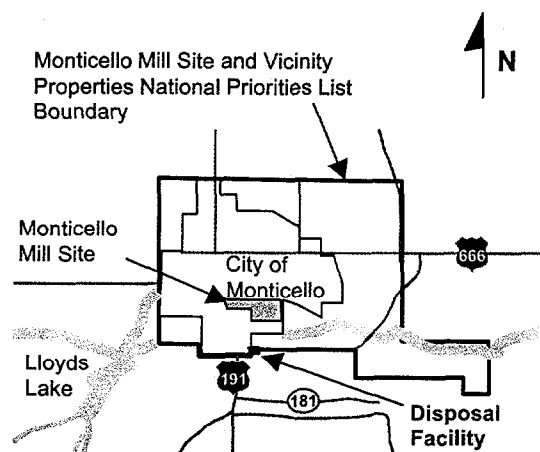
Every 5 Years
to 2095

For specific information on the INEEL CERCLA Disposal Facility, please contact Talley Jenkins in the Idaho Operations Office at (208) 526-4978 or jenkintw@id.doe.gov.

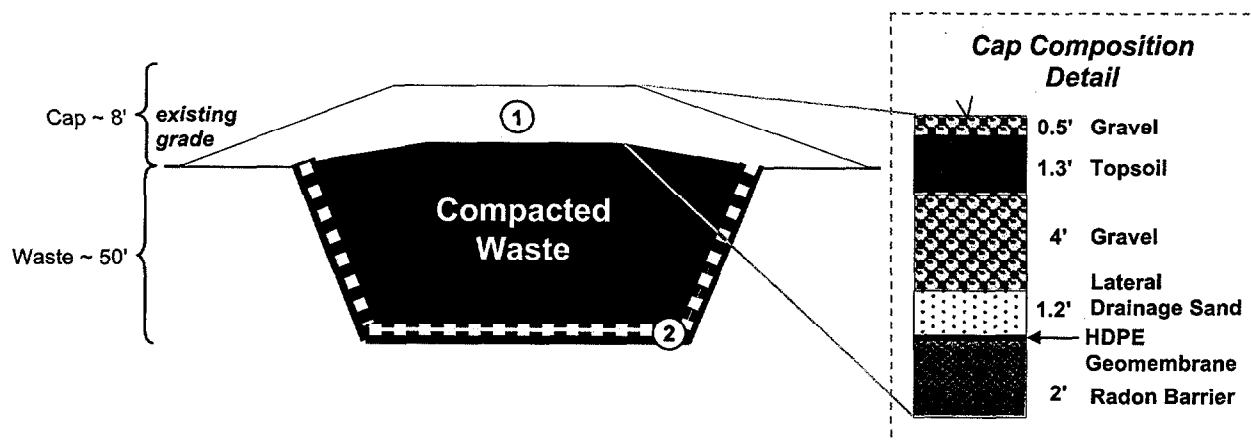
Monticello Disposal Facility



Site Layout



Design



The facility is designed to meet the radiological protection criteria set forth in 40 CFR 192 (Uranium Mill Tailings Remedial Action regulations for closure standards).

- ① The cap is covered by a vegetative cover and includes a high-density polyethylene (HDPE) liner. The cap is designed to maximize evaporation of rainwater so that little or no moisture passes down to tailings (see inset above for cap composition details).
- ② The base of the cell includes a double liner system beneath the tailings. The two liners are designed to ensure protection of the groundwater. A leachate collection and removal system exists and includes a leak detection system.

Support facilities include a wastewater treatment plant, four lined retention ponds, and construction offices. The vast majority (>90%) of the material used in the construction of the facility is from onsite material obtained from excavation.



OCT
1989

Sept
1990

Location and Size

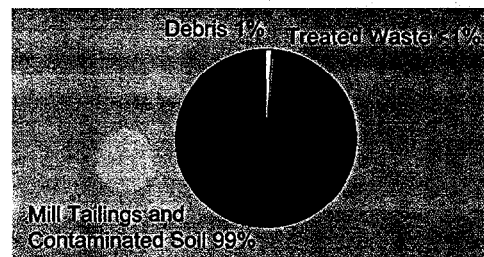
- The Monticello Mill Site is located in San Juan County, Utah, near the city of Monticello, in the southeastern corner of Utah.
- The Monticello Disposal Facility is located 1 mile due south of the Monticello Mill Site.
- The footprint used for waste disposal is 80 acres, with a total facility area of approximately 108 acres including the buffer zone.

Waste Type

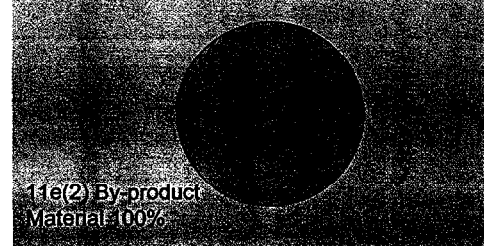
Total Estimated Volume to be Disposed = 1,800,000 m³

- Waste is accepted from the former mill site and 425 vicinity properties.
- The principal contaminants of the mill tailings include uranium, radium-226, arsenic, copper, vanadium, lead, and other metals.
- Wastes are unpackaged, bulk soils minimizing the need for waste handling.
- Note: The term 11e(2) by-product material comes from Section 11e(2) of the Atomic Energy Act of 1954 as amended, and in 40 CFR 192 where the definition of uranium mill tailings and other by-product materials is given as "tailings or waste produced by the extraction or concentration of uranium from any ore processed primarily for its source material content."

Waste Form



Waste Category



Source: DOE, 1990, Monticello Mill Tailings Site Declaration and Summary for the Record of Decision, with volumes updated in a December 1998 survey.

Monticello Facility vs. Range of ER CERCLA On-Site Disposal Facility Unit Costs

\$/m³



Capital costs include regulatory documentation, design, procurement, facility construction, engineering, QA/QC, and oversight.



Operating costs include facility operation, air and groundwater monitoring, leachate management, and contractor management oversight.



Capital and operating costs were totaled to develop a combined sum cost for each of the six facilities; this bar chart portrays the range of these six facility-specific combined-sums.

The disposal costs shown here are estimates from Phase I of an analysis performed by the Environmental Restoration Waste Issues Crosscutting Team. More detailed estimates are being analyzed in a Phase II effort currently underway and include long-term stewardship. These profile sheets will be updated to include any changes in unit cost estimates resulting from the Phase II effort.



— Estimated Cost at Monticello (in '98 dollars)

Construction Completed

Nov 1996

Waste Received

Spring 1997

Operation Began

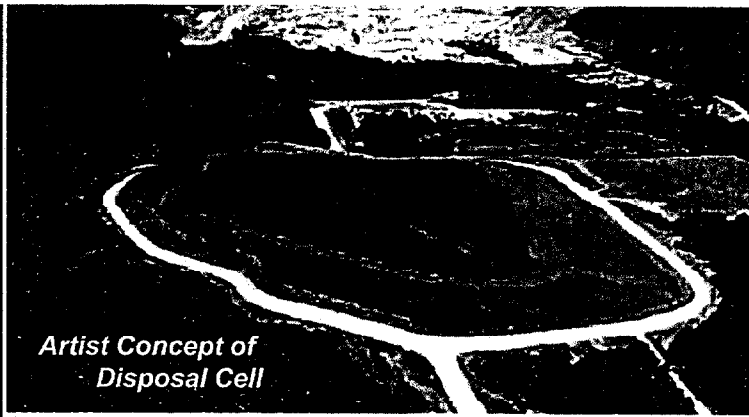
2000

Facility Performance Review

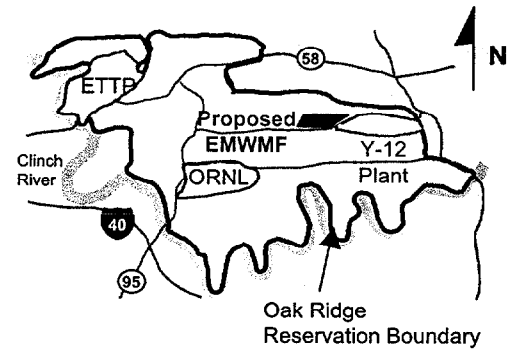
Every 5 Years

For specific information on the Monticello Disposal Facility, please contact Joel Berwick in the Grand Junction Project Office at (970) 248-6020 or Joel.Berwick@DOEGJPO.com..

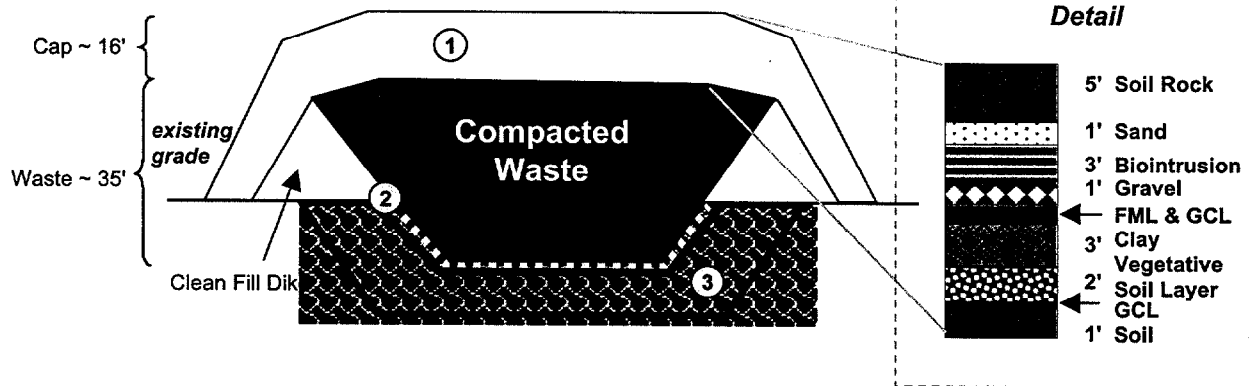
Oak Ridge Environmental Management Waste Management Facility



Site Layout



Design



The cell would be an above ground level design with some waste residing below ground level, but never below the water table. This is a conceptual design, and subject to change during development.

- ① The cap would be 16 feet with a biointrusion layer to prevent inadvertent future intrusion into the waste (see cap composition inset above).
- ② The disposal facility would be double lined with a geosynthetic clay liner (GCL), and a flexible membrane liner (FML), to allow collection of leachate and stormwater run-off and to protect local groundwater from leachate contamination.
- ③ There would be a 5 to 10-foot geological buffer between the base of the cell and the water table.

Support facilities would include a leachate collection and transfer facility, a decontamination facility for waste containers and transport vehicles, access roads, stormwater retention basins, and monitoring systems. To support construction of the disposal facility, an existing on-site borrow area would need to be expanded, requiring the clearing of 12 to 18 additional acres.



Oct
1998

Sept
1999

Apr
2000

2001

Location and Size

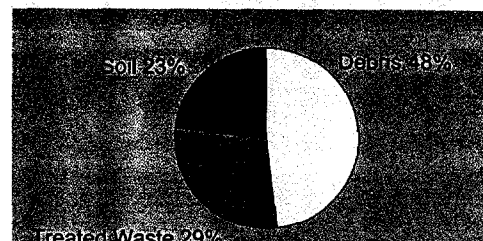
- The Oak Ridge Reservation (ORR) is located approximately 15 miles northwest of Knoxville, Tennessee.
- The proposed Oak Ridge Environmental Management Waste Management Facility (EMWMF) would be located in Bear Creek Valley near the center of the 58-square mile (or 37,000-acre) Reservation.
- The facility footprint used for waste disposal would be between 22 and 44 acres, depending on the final size actually needed. The total area including support facilities and buffer zone, would be between 64 and 98 acres.

Waste Type

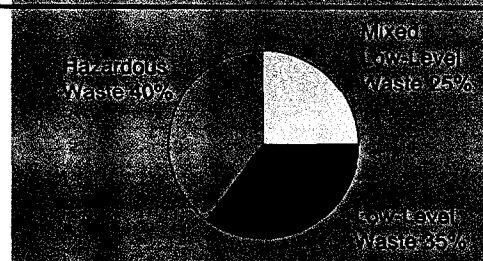
Total Estimated Volume to be Disposed = 840,000 m³

- The proposed EMWMF would accept waste from CERCLA remedial actions conducted on the ORR only. Sources of debris are expected to be building decontamination and decommissioning (D&D) at ETTP, and building and reactor D&D at ORNL.
- The primary radiological contaminants are uranium and technetium.
- Approximately 30 percent of the wastes at the ORR are expected to require treatment to immobilize hazardous contaminants (as defined by RCRA) in soil and debris waste streams and to remove liquids from sludge waste streams to meet land disposal restrictions.
- Waste may be delivered unpackaged in lined dump trucks, in roll-off boxes, or in sacrificial containers (drums or B-25 boxes).

Waste Form



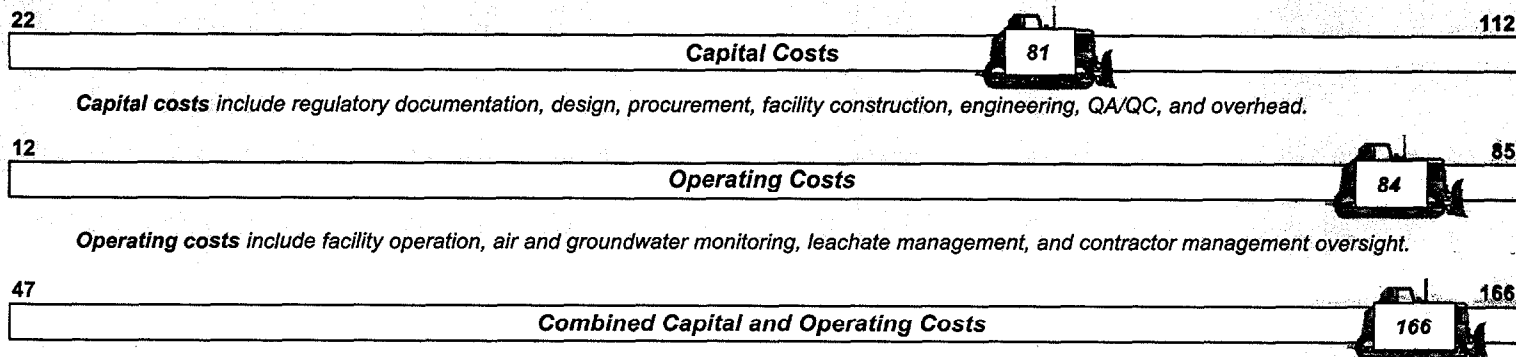
Waste Category



Sources: DOE, 1999, *Proposed Plan for the Disposal of Oak Ridge Reservation Comprehensive Environmental Response, Compensation, and Liability Act of 1980 Waste (DOE/OR/01-1761&D3)*. DOE, 1998, *Addendum to Remedial Investigation/Feasibility Study for the Disposal of Oak Ridge Reservation Comprehensive Environmental Response, Compensation, and Liability Act of 1980 Waste (DOE/OR/02-1637&D2/A1)*.

Oak Ridge EMWMF vs. Range of ER CERCLA On-Site Disposal Facility Unit Costs

\$/m³



Capital costs include regulatory documentation, design, procurement, facility construction, engineering, QA/QC, and overhead.

Operating costs include facility operation, air and groundwater monitoring, leachate management, and contractor management oversight.

Capital and operating costs were totaled to develop a combined sum cost for each of the six facilities; this bar chart portrays the range of these six facility-specific combined-sums.

The disposal costs shown here are estimates from Phase I of an analysis performed by the Environmental Restoration Waste Issues Crosscutting Team. More detailed estimates are being analyzed in a Phase II effort currently underway and include long-term stewardship. These profile sheets will be updated to include any changes in unit cost estimates resulting from the Phase II effort.

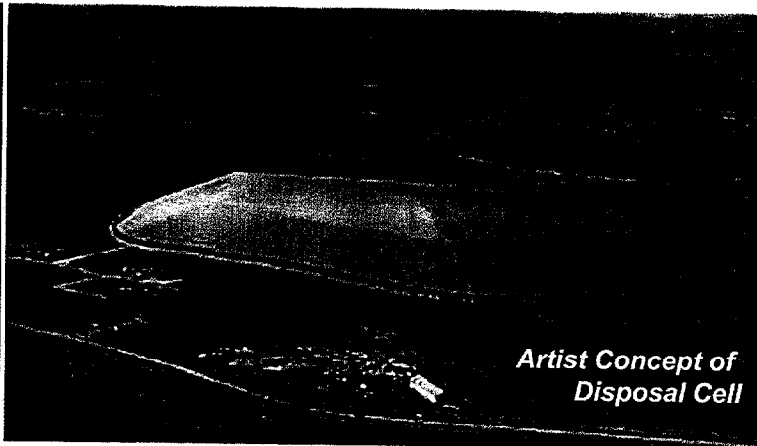
– Estimated Cost at Oak Ridge (in '98 dollars)

2011 2033*

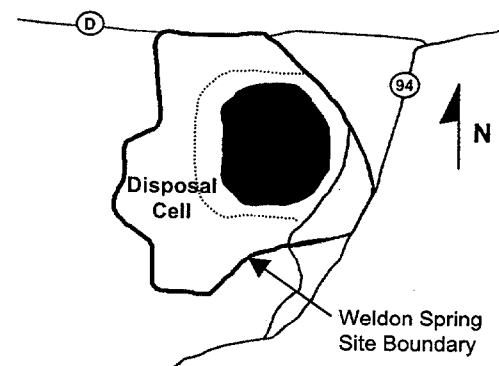
Every
5 Years

For specific information on the Oak Ridge EMWMF, please contact Bill Cahill in the Oak Ridge Operations Office at (423) 241-4830 or cahillwj@oro.doe.gov.

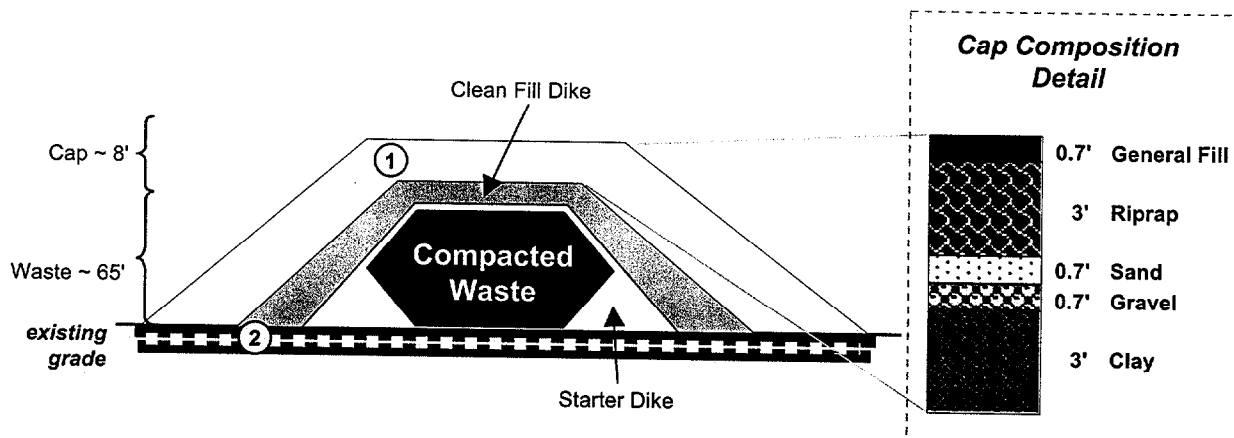
Weldon Spring Site Remedial Action Disposal Facility



Site Layout



Design



The cell averages 73 feet above ground including the 8-foot cover. It meets RCRA design criteria and radiological protection criteria set forth in 40 CFR 192 (Uranium Mill Tailings Remedial Action regulations for closure standards).

- ① The multilayer cover includes an infiltration/radon attenuation barrier, a biointrusion layer, a frost protection layer and an erosion protection layer (see above inset for cap composition details).
- ② The facility is double lined and includes a leachate collection system. Primary and secondary liners are a composite consisting of flexible membrane and clay liners. The lower leachate collection system also serves as a leachate detection system and will facilitate monitoring cell performance.

Support facilities in addition to the Chemical Stabilization/Solidification Plant include a construction material staging area, sediment retention basins, a 200-acre borrow area, and a dedicated borrow haul road. Also, the adjacent Highway 94 was realigned.



June
1993

Sept
1993

Mar
1997

Spring
1998

Location and Size

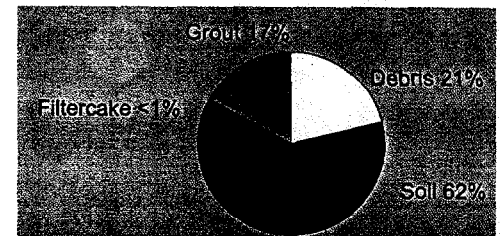
- The Weldon Spring Site is located approximately 10 miles west of the St. Louis, Missouri area.
- The Weldon Spring Site Remedial Action Disposal Facility is located in the northeastern portion of the 226-acre Chemical Plant Site.
- The footprint to be used for waste disposal is approximately 40 acres, with a total facility area of 70 acres including the buffer zone.
- The key factors in reaching the decision to construct this disposal facility were ease of implementation, short-term effectiveness, and cost.

Waste Type

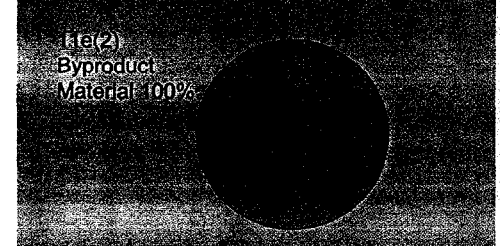
Total Estimated Volume to be Disposed = 1,100,000 m³

- The contaminated materials are in the form of soils, bulk wastes from the associated Quarry site, sludges, debris, and components of disassembled chemical plant structures. The sludges, produced during uranium refinement, are being treated to remove chemical contaminants. Further treatment in the Chemical Stabilization/Solidification Plant will prepare them for placement in the permanent disposal facility.
- The primary contaminants are thorium-230 and uranium.
- Note: The term 11e(2) by-product material comes from Section 11e(2) of the Atomic Energy Act of 1954 as amended, and in 40 CFR 192 where the definition of uranium mill tailings and other by-product materials is given as "tailings or waste produced by the extraction or concentration of uranium from any ore processed primarily for its source material content."

Waste Form



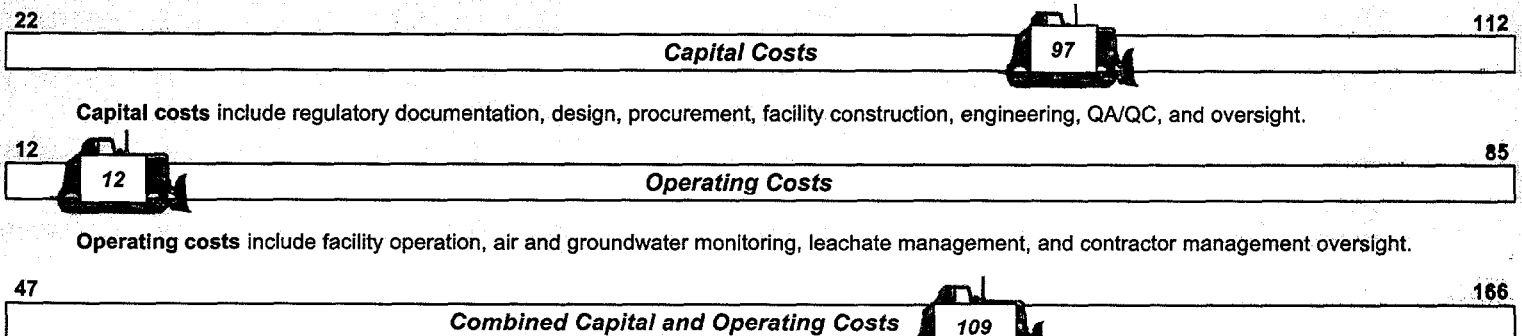
Waste Category



Source: DOE, 1999, Final Design Package for the Weldon Spring Site Disposal Facility.

Weldon Spring Site vs. Range of ER CERCLA On-Site Disposal Facility Unit Costs

\$/m³



Capital costs include regulatory documentation, design, procurement, facility construction, engineering, QA/QC, and oversight.

Operating costs include facility operation, air and groundwater monitoring, leachate management, and contractor management oversight.

Capital and operating costs were totaled to develop a combined sum cost for each of the six facilities; this bar chart portrays the range of these six facility-specific combined-sums.

The disposal costs shown here are estimates from Phase I of an analysis performed by the Environmental Restoration Waste Issues Crosscutting Team. More detailed estimates are being analyzed in a Phase II effort currently underway and include long-term stewardship. These profile sheets will be updated to include any changes in unit cost estimates resulting from the Phase II effort.



— Estimated Cost at Weldon Spring Site (in '98 dollars)

Disposal Facility

2001

Facility Performance Review

Every 5 Years

For specific information on the Weldon Spring Site Disposal Facility, please contact Steve McCracken, DOE Project Manager, at (314) 441-8978 or steve_mccracken@wssrap-host.wssrap-com.

Acknowledgements

The *Profiles* were developed by members of the Environmental Restoration Waste Issues Crosscutting Team, a group of Federal and contractor staff who have a common interest in resolving waste issues specific to the Environmental Restoration Program. The following Headquarters, Field Office, and contractor personnel are recognized for their contributions to the technical quality and accuracy of this document.

Joel Berwick
Jill Bilyeu
Bill Cahill
Todd Clark
Jennifer Clay
Marshall Davenport
David Duderstadt
Jeannie Foster
R.D. George
Lew Goidell
Sal Golub
Marilyn Gossit
Maan Hashem
Mike Hickey
Bill Holman
Guy Hopper

Jay Jalovec
Talley Jenkins
William MacRoberts
Ashur Michael
Glen Newtown
Robert Orewiler
Bill Owen
John Patterson
Bob Ratzer
Deborah Richardson
Owen Robertson
Bob Robey
Dane Rosendahl
Lisa Treichel
Andrew Vincent
Stephen Warren